AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-16 (Cancelled)

17. (Currently Amended): A device for the detection of at least one ligand contained in a sample that is to be analyzed, said device comprising:

an optical waveguide defining a single light path along which multiple detection fields and multiple radiation receivers are disposed, each detection field including at least one receptor for contacting a ligand to form a specific bond with the ligand;

at least one optical source of radiation for injecting excitation radiation into the waveguide, the radiation being used for exciting the emission of luminescence radiation as a function of the bonding of ligands to receptors; and

a semiconductor chip having said radiation receivers on a semiconductor substrate, each detection field having ~~at least~~ one radiation receiver associated therewith, each radiation receiver operative for detecting only the luminescence radiation sent out by the detection field associated therewith, wherein:

the waveguide is monolithically integrated with the semiconductor substrate or is in the form of a waveguide layer located on the semiconductor chip; and

the radiation receiver associated with each detection field is integrated into the semiconductor substrate facing the detection field directly on the back side of the waveguide facing away from the detection field.

18. (Previously Presented): The device of claim 17, wherein the semiconductor chip includes a boundary surface opposite the receptors between the semiconductor chip and the waveguide, the boundary surface running between two planes that are oriented parallel to the plane of extension of the semiconductor chip, wherein the distance between the two planes is less than the wavelength of the excitation radiation.

19. (Previously Presented): The device of claim 17, wherein the semiconductor chip, laterally next to the waveguide, has an electronic circuit.

20. (Previously Presented): The device of claim 17, wherein:

between the semiconductor chip and the waveguide there is an intermediate layer, the optical index of refraction of which is less than that of the waveguide;

a side of the intermediate layer adjacent the semiconductor chip conforms to a surface of the semiconductor chip; and

a side of the intermediate layer adjacent the waveguide is essentially plane.

21. (Previously Presented): The device of claim 20, wherein the intermediate layer is an adhesive coating.

22. (Previously Presented): The device of claim 17, wherein the waveguide is connected with the semiconductor chip at least at one bonding point.

23. (Previously Presented): The device of claim 17, wherein the waveguide is a thin-film layer of a transparent polymer material.

24. (Previously Presented): The device of claim 17, wherein the waveguide is a metal oxide layer.

25. (Previously Presented): The device of claim 17, wherein the optical radiation source is a semiconductor radiation source that is integrated into the semiconductor chip.

26. (Previously Presented): The device of claim 17, further including an optical injection system provided in the emission area of the optical radiation source for deflecting optical radiation emitted by the optical radiation source to the waveguide.

27. (Previously Presented): The device of claim 17, wherein the detection fields are spaced from one another and are positioned relative to the radiation receivers so each radiation receiver receives essentially no luminescence radiation from a detection field of an other radiation receiver.

28. (Previously Presented): The device of claim 17, wherein:

the receptors are located in an interior cavity of a flow-through measurement chamber that has at least one inlet opening and one outlet opening; and

the semiconductor chip defines a wall area of the flow-through measurement chamber.

29. (Previously Presented): The device of claim 28, further including a heating and/or cooling device for controlling a temperature of the flow-through measurement chamber.

30. (Previously Presented): The device of claim 28, wherein the flow-through measurement chamber includes at least one reagent and/or reaction partner for the detection of the bonding of at least one ligand to at least one receptor.

31. (Previously Presented): The device of claim 18, wherein the distance between the two planes is less than either one-half, one-fourth or one-eighth of the wavelength of the excitation radiation.

32. (Previously Presented): The device of claim 21, wherein the adhesive coating is a polymer coating.

33. (Previously Presented): The device of claim 23, wherein the polymer material is polystyrene.

34. (Previously Presented): The device of claim 24, wherein the metal oxide layer is either a silicon dioxide layer or a tantalum pentoxide layer.

35. (Previously Presented): The device of claim 26, wherein:

the optical injection system is part of the waveguide; and

the optical injection system includes at least one of the following: a prism, an optical lattice and/or a deflecting mirror.

36. (Previously Presented): The device of claim 29, wherein the heating and/or cooling device is a Peltier element.